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Financial risk estimation in construction contracts

Agnieszka Dziadosz^a, Andrzej Tomczyk^b, Oleg Kapliński^c

^a *Institute of Structural Engineering, Poznan University of Technology*

^b *Commercial enterprise with headquarters in Poznań*

^c *Faculty of Architecture (IAP), Poznan University of Technology*

Abstract

Risk, as a factor adversely affecting the project, is taken into account as early as at the first stage of the investment process when the tender is won for a contract. The risk level, identified for a particular construction contract, is a serious factor influencing the decision about accepting the contract or not. The key issue is proper identification of contract risk. The risk factors which have a significant impact on the success of the project, and are most common ones, are then analyzed. The method of verification depends on the company's experience in the construction industry. The task of the article is to present the results of studies focused on separating and determining the frequency of financial risk factors in construction projects and their impact on project implementation. We have analyzed 30 construction projects (office buildings, production halls, educational buildings, demolition works, etc.) completed in north-western Poland. The degree of risk (planned and real) for the contract was set as a percentage in relation to the size of contract (costs in million PLN). The aim of the study was to verify the existence of relationship between the kind of structure, the size of contract, and the scope and degree of risk. Statistical approach has been used. This study is a prelude to determining the contract risks identification procedure (i.e., estimating reserves to be used in unforeseen circumstances) so that the company could be competitive, and the price offer to be provided to investors could be advantageous.

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* Corresponding author. Tel.: +0-000-000-0000 ; fax: +0-000-000-0000 .

E-mail address: Agnieszka.Dziadosz@put.poznan.pl

1. Introduction

Project planning, if it is to be efficiently implemented, requires making a number of decisions that have their finale in the smooth running of construction work. This is possible thanks to examining a project from its many aspects and angles, also in terms of likelihood of adverse situations (i.e., risk factors). The risk, as a factor adversely affecting the project, is weighed at the first stage of the investment process, namely at the stage of winning a contract through tender. In view of the situation in the construction industry, where the main aim is to minimize the costs of construction work, as well as to gradually decrease the prices for construction work, procuring an offer for construction work is very difficult. On the one hand, a construction company tries to maximize the profit (in order to secure funds for new investments, and cover possible expenses associated with the occurrence of risk factors during construction). On the other hand, a construction company tries to be competitive and tries give the investor the best price offer. The following question arises – at what level risk should be taken in case of a particular contract in order to win the tender and to secure funding for risks which are very difficult to assess. In the course of project implementation, different situations may occur which, at first glance, may seem unfavourable but, in consequence, may bring financial savings due to the changes of construction techniques, work scope or changes in organization. Construction companies usually analyze most common risk factors, and especially those with potential major impact on construction. The method of verification depends on the company's experience in the industry. The aim of this article is to present the results of research on financial risk factors impacting on construction projects. The second step of the research is to develop a financial risk analysis model which can be used in assessing construction contracts, specifying the size of necessary resources as backup for unforeseen circumstances.

2. Types of contracts

In Poland, there are two preferred procedures of winning a contract. The first is public procurement, and the second is a private order. The first procedure is associated with the public procurement law and is strictly codified. Strict rules apply there, which should be adhered to. In the current, competitive situation on the construction services market, most often the only selection criterion is the price. It is the reason why specific items on the price list have to be closely examined. Pricing related to direct costs is relatively easy to calculate, though sound experience is necessary, in addition to good knowledge of detail. There is not much difference between prices of materials and services on the market but a company may be more competitive if it suggests cheaper material and technological solutions, or will organize the work better. The prices offered by suppliers or subcontractors at the tender stage are usually higher than the prices settled after the tender has been concluded. The results of the studies, presented later in the article, suggest that the differences may range from one to even more than ten per cent, which means that additional profit on the project can be significant. This is how the risk, which has not been calculated at the pre-tender stage, can be covered. The fact is that if a company offers a high price, it will lose the tender, while an excessively low price may result in a financial loss at the end of the construction project. Another element is overheads, where there is a certain margin of risk. At that stage we need to determine the costs according to our best experience from the past. Typically, the employee potential and optimal composition of the team are known, so it is easy to calculate how much the team will cost. The last element is markups which are similar in companies of similar potential and size. Markups on company's operations are taken as a percentage of the value of direct costs of the offer. On the other hand, profit and risk are values calculated as a percentage of costs. Profit in large companies is assumed to be at a similar level - between 1% and 5% (depending on the scope and size of contracts, and the company).

Risk is the factor which is relatively difficult to evaluate. In public tenders, in principle, everything needs to be taken into account: every type of risk which in various aspects of activity at the building site. There are risks from the quotation procurement phase, economic risks associated - for example -, with currency exchange rates, if equipment is purchased abroad, technical risks related to the conditions on the site, legal risks associated, for instance, with the provisions in the agreement. Additional costs associated with unexpected risks are in the range from 0% to 5 percent, and even more in extreme cases (the degree of risk in the present study, in the case of an investment project rejected from the set during further analysis, was in excess of 30%).

Public tenders practically exclude the possibility of negotiations and, consequently, restricting contractual liability for unforeseen events is impossible. Tenders for private investors are governed by somewhat different rules.

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